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| **Unit: Representing Relationships Lesson # 3**  Essential Questions:   * How can I define the relationship between x and y? * How do I know if there is a constant/linear relationship between two variables? | **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **Subject:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  **HR:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |
| **Objective/ AIM:**   * I will be able to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | |
| **Warm Up:**  Which of the following graphs shows a linear relationship?   |  |  |  |  | | --- | --- | --- | --- | |  |  |  |  | | |
| **Notes:**   1. Graphs, Tables and Equations (G.E.T) all display the same information in different ways   **Vocabulary**   * Graphs * Tables * Functions * Constant Rate of Change * Linear  1. Equations can show us a relationship in a condensed way 2. Linear equations help us to accurately predict values of x and y 3. In order to write an equation from a table, we need to find a rule between x and y.   (Ask: What is happening to X to give us Y? The rule MUST work for every pair!!!!)  **Examples/Notes:**   |  |  |  | | --- | --- | --- | | **Table** | **Rule and Thoughts** | **Equation** | | |  |  | | --- | --- | | **In**  **(X)** | **Out (Y)** | | 1 | 8 | | 2 | 16 | | 3 | 24 | | 4 | 32 | | I look at the first row and think:  How do I get from 1 to 8? I know that I can 7 to 1 and get 8. Now I check that rule (add 7) to the next row. However, 2 + 7 ≠ 16. Now I know that the rule +7 does not work.  So I think:  I can multiply 1 x 8 and it works for the second row too (2 **x 8** = 16). As I continue I see that it works for every row. So my rule is multiply by 8. | So I know the rule is x 8 (multiply by 8)  I can write that as an equation like this:  X ● 8 = Y  or  8X = Y  Now I can use that equation to find the value of Y for any given x.  For example, if X= 8 then Y=64 because:  8(8) = 64 | | |  |  |  |  |  | | --- | --- | --- | --- | --- | | **X** | 1 | 2 | 3 | 4 | | **Y** | 8 | 9 | 10 | 11 | | What is the rule for this chart?  Does your rule work for all values? | Use your rule to write an equation.  Think what is happening to X in order to get to Y? |   For each table, write the rule and then write the equation.   |  |  |  | | --- | --- | --- | | **Table** | **Rule** | **Equation** | |  |  |  | |  |  |  | | |  |  | | --- | --- | | **Number of Books** | **Price Paid** | | 6 | $30.00 | | 12 | $60.00 | | 18 | $90.00 | |  |  | |  |  |  |   Use the equation to complete the function   |  |  | | --- | --- | |  |  | |  | |  |  |  |  |  | | --- | --- | --- | --- | --- | | weeks |  |  |  |  | | income |  |  |  |  | | | |

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**Class Work: Tables and Equations**

**Directions:** Use the chart to create an equation that would work for each table.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **X** | 10 | 15 | 21 | 30 | | **Y** | 2 | 7 | 13 | 22 |   **Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**  *Check to make sure your rule works for EVERY value in the chart!* | 2.   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | **In** | **Out** | | 3 | 10 | | 6 | 13 | | 2 | 9 | | 9 | 16 | | **Equation:**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | |
| 3.   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | |  |  | | --- | --- | | **In** | **Out** | | 3 | 5 | | 7 | 13 | | 11 | 21 | | 9 | 17 | | **Equation:**  **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** | | 4.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | **X** | 3 | 6 | 7 | 2 | | **Y** | 12 | 24 | 28 | 8 |   **Equation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** |

**Directions:** Choose the best answer choice for each multiple choice question.

1. Sean made the input-output table shown below.

|  |  |
| --- | --- |
| Input(*x*) | Output(*y*) |
| 3 | 8 |
| 4 | 10 |
| 5 | 12 |
| 6 | 14 |

Which of the following equations is true for all values in Sean’s input-output table?

1. *x* + 5 = *y*
2. *x* + 6 = *y*
3. 2*x* + 2 = *y*
4. 3*x* – 1 = *y*
5. The cost for labor at a car repair center is shown in the table below.

**Car Repair Costs**

|  |  |
| --- | --- |
| **Hours** | **Total Cost** |
| 1 | $  60 |
| 2 | $120 |
| 3 | $180 |
| 4 | $240 |

Based on the data in the table, which of the following equations represents the total cost, in dollars

of a repair that requires *h* hours of labor?

1. *h* + 60 = *total cost*
2. *h* – 60 = *total cost*
3. *h* x 60 = *total cost*
4. *h* ÷ 60 = *total cost*
5. Bridge created the input-output table shown below.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Input | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| Output | 4 | 6 | 8 | 10 | 12 | 14 | 16 |

Which of the following rules is true for all values in Bridget’s table?

1. Input + 3 = Output
2. Input x 3 = Output
3. (Input x 2) + 1 = Output
4. (Input x 2) + 2 = Output

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **6th Grade Spiral Skills HW**   * **SHOW ALL OF YOUR WORK!** * **Circle** your answer * Use **PENCIL** only! * Use your **math journal** and **notes** to help you! | | | Quarter 2 Skills  C:\Documents and Settings\kivory\Local Settings\Temporary Internet Files\Content.IE5\LUB8D2YH\MCj04361510000[1].wmf | | Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  HR\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| **#** | **Skill** | **Question** | | **Work Space** | |
| 1 | Fraction Operations | What is the product of  and ?   |  |  | | --- | --- | | 1. 1 |  | |  |  | | |  | |
| 2 | Fraction, Decimal, Percent Conversions | Reduce  to its lowest common form. | |  | |
| 3 | Estimation | The total length of all the songs on a CD Mohammed bought is about 80 minutes. Each song is between 4 and 6 minutes long. Which is a reasonable number of songs that could be on the CD?   1. 10 2. 40 3. 74 4. 16 | |  | |
| 4 | Coordinate Planes |  | |  | |

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**HW: Tables and Equations**

**Directions:** Choose the best answer choice for each question. Show your work.

1. Tariq is using the table below to help him mix sugar and water to feed hummingbirds.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Cups of Sugar (*s*)** | 1 | 2 | 3 | 4 |
| **Cups of Water (*w*)** | 2 | 4 | 6 | 8 |

Which equation shows the relationship between *s* and *w*?

1. *w* = 2*s*
2. *w* = 
3. *w* = *s* + 2
4. *w* = *s* – 2
5. The table below shows how many scoops of hot chocolate mix are needed in order to make different numbers of cups of hot chocolate.

|  |
| --- |
| Hot Chocolate Mix Recipe |
| |  |  | | --- | --- | | Number of Cups of Hot Chocolate (*c*) | Number of Scoops of Mix Needed (*s*) | | 2 | 4 | | 4 | 8 | | 6 | 12 | | 8 | 16 | |

For the data in the table, which of the following equations can be used to calculate *s*, the number of scoops of hot chocolate mix needed to make *c* cups of hot chocolate?

|  |  |
| --- | --- |
| 1. *s =* 2 +  *c* | 1. *s =* 2*c* |
| 1. *s =* 2 +  *c* | 1. *s =* |

**Directions:** Answer each open – ended question below. Show all work.

|  |
| --- |
| 1. The table below shows the relationship between *t*, the number of tickets to a school social, and *c*, the total cost, in dollars, of the tickets. |
| **Total Cost of Tickets**   |  |  | | --- | --- | | Number of Tickets (*t*) | Total Cost in Dollars (*c*) | | 1 | 5 | | 2 | 10 | | 3 | 15 | | 4 | 20 | |
| Write an equation that represents the relationship between *t* and *c* for the data shown in the table. |

1. Ericka earns $20 each week. She spends $5 each week and saves the rest. The table below shows the total amount that she saved at the end of each week for 4 weeks.

**Ericka's Savings at the End of Each Week**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Week** | 1 | 2 | 3 | 4 | *n* |
| **Total Amount Saved** | $15 | $30 | $45 | $60 | ? |

Ericka continues to save at the same rate.

Use numbers, words, or symbols to write an expression that represents Ericka’s total amount saved at the end of n weeks.

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**EXIT TICKET: Tables and Equations**

Show what you know!

1. Based on the information given in the table shown below, which of the following equations correctly states the relationship between  *x* and *y*?

|  |  |
| --- | --- |
| ***x*** | ***y*** |
| 1 | 3 |
| 2 | 4 |
| 3 | 5 |
| 4 | 6 |
| 5 | 7 |

1. *y* = 2x
2. *y = x ÷* 2
3. *y = x +* 2
4. *y = x –* 2
5. In which of the following tables does each pair of numbers (*x*, *y*) satisfy the equation shown below?

*x* + 6 = *y*

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  | | --- | --- | | *x* | *y* | | 1 | 7 | | 2 | 9 | | 3 | 9 | | |  |  | | --- | --- | | *x* | *y* | | 1 | 6 | | 2 | 8 | | 3 | 10 | |
| |  |  | | --- | --- | | *x* | *y* | | 1 | 7 | | 2 | 8 | | 3 | 9 | | |  |  | | --- | --- | | *x* | *y* | | 1 | 5 | | 2 | 4 | | 3 | 3 | |